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# The Ecology of Sharing: Synthesizing OER Research

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## **Abstract**

Arguably, Open Educational Resources (OER) are starting to enter the mainstream, though some fundamental questions about their value and impact remain to be answered or supported with appropriate evidence. Much early OER activity was driven by ideals and interest in finding new ways to release content, with less direct research and reflection on the process. Furthermore, the majority of OER studies are localised, making extrapolation problematic. At the same time there are considerable practical experiences and ideas that it would be valuable to share. This presentation introduces the 'hub' as metaphor for the kind of networked research that is needed by the OER movement. The Open University's OER Research Hub project (2012-2014) works across eight primary research collaborations augmented with additional fellowships and connections with organisation to collate and synthesize research into OER across a range of sectors and stakeholders (K12, College Entry, Higher Education, Informal). The guiding research hypotheses are grounded in preparatory work in discourse analysis and collective intelligence as part of the OLnet project (McAndrew et al., 2012). We then describe the research methodology for OER Research Hub, showing how claims about 'openness' may be validated in different contexts. The argument presented is that through (1) integrating and co-ordinating research methods and (2) developing open data policies it is possible to build an evidence base for the kinds of claims that the OER movement wants to make. Thus, through an 'ecology of sharing' researchers can build and participate in a research network that is greater than the sum of its parts. We will also show how this is working in practice by highlighting some of the activities that are taking place within some collaborations, showing how harmonizing the questions we ask in surveys and interviews across the different collaborations enhances our ability to make normative claims which apply in the broadest range of educational contexts.

## **Keywords**

OER, research, metaresearch, collaboration, technology, education, openness, policy, innovation, access

## **Introduction: The OER Research Hub**

This paper outlines an open approach to research in OER, describing the methodology and structure of a large scale study (OER Research Hub, 2013). The Open Educational Resources Research Hub is funded by the William and Flora Hewlett Foundation under the OER strand of their education programme (Hewlett, 2013). The project provides a focus for international research activities, designed to give answers to the overall question 'What is the impact of OER on learning and teaching practices?' and identify the particular influence of openness across a range of education sectors and practices.

The OER Research Hub at The Open University combines:

- A schedule of targeted collaboration with existing OER projects;
- An international fellowship programme;
- Facilitating networking, participation and advocacy in the OER world;

- A hub for research data and OER practice

OER Hub is located at The Institute of Educational Technology (IET) at The Open University, and the project draws on the general strengths of the OU as a provider, user and developer of OER.

## The Ecology of Sharing

Meeting the challenges of openness requires research strategies which take account of the different aspects of OER impact. In the OER world, the way forward is associated with greater transparency and sharing of educational materials and research. Similarly, a more useful evidence base should emerge through taking advantage of working openly and in collaboration as it allows for the pooling of limited resources and greater scale and efficiency through co-ordinated action. We have termed this an 'ecology of sharing' to convey the idea that research 'in the open' requires us to make sense of how a range of factors influence changing practices *in situ*. In order to understand change on this scale, we need to understand the interrelation of many complex phenomena. According to the classic Haeckelian definition, ecology is the study of the relationship between organisms and environment. This can in turn be understood through analysis of the distribution and abundance of organisms (Andrewartha and Birch, 1954) or at the level of ecosystem (Odum, 1971). Just as an ecological description includes manifold factors (most of which cannot or should not be controlled) we also need a holistic approach to OER research which can make sense of activities *within* native environments. This kind of research focuses on the complex relationships that exist between diverse elements, the importance of environment, and emergent phenomena like diversity, abundance and change. We can see new challenges emerging as a result of structural/global change in education to mean ambitions, financial constraints and the opportunity of new models (Daniel, 2012). As Weller (2011) argues, "we are witnessing a fundamental change in the production of knowledge and our relationship to content" which has produced an unprecedented abundance of educational material. Making sense of innovation at this scale requires an approach which can make sense of complexity.

## Open Research Methodologies

In practice, the way in which we enact this ecology approach in OER Research Hub is by centring research outside the project and seeking to understand the ecosystem as a whole, framing the motivating problems in terms of an 'evidence gap' relating to the benefits of – and barriers to – widespread OER adoption. The project builds on previous work that worked across research themes, drew in experiences and identified key challenges within the OLnet project. However, it also takes a distinctive direction in terms of its overall approach and research foundations. The characteristic of this new phase of work is the use of research hypotheses, and interlinked set of sub-projects that are intended to provide the data on which we can build the evidence to address those hypotheses.

## The challenges of open education research

A great deal of progress has been made in both the practice of producing and applying OER and the initiating of a strand of OER research in recent years (e.g. UNESCO/COL, 2013). However, there remain many unanswered questions and uncertainties about the best way forward in the future. In OLnet, twelve key challenges were developed and characterised (McAndrew et al., 2012). These gave a good picture of shared concerns and were linked through an evidence-based approach to examples where issues arose and correspondingly to cases where solutions were being applied. Structurally, however, the use of challenges is most

applicable as a way of focusing collective efforts (e.g. NSF, 2011; NAE, 2013). The direction of OER as an emerging area is being shaped by advocacy, policy, economics, and, to a certain extent utopianism. We are therefore drawn for research purposes towards an aggregated, cohesive and long-term view as explored through the hypotheses.

The research questions were derived through the application of several approaches:

- drawing on experience in participating in the OER community;
- working with input from the OER Advocacy Group in gathering information for the OLnet Evidence Hub;
- analysis of the types of claim made in the Evidence Hub and the accompanying activities performed at the Hewlett Grantee meetings;
- reviewing the research projects from the OLnet project and the outcomes and issues from the associated projects such as the research strand within Bridge to Success (Coughlan, Pitt & McAndrew, 2013).

It is imperative that guiding research questions be framed in ways which are meaningful and robust. Distilling these sources of information provided a set of topics that covered the main areas of concern, or the types of claims frequently made regarding OERs, which could be usefully supported by evidence. These topics were reviewed as part of the development of the proposal and plan of work. The statements were then phrased as testable hypotheses, which evidence may support or refute. By framing issues as hypotheses it becomes possible to:

- articulate plans for validation across the project as a whole;
- seek normative evidence which nonetheless recognises when variables cannot be controlled according to the 'scientific' model of assessing educational interventions;
- align work with the need at policy level for clear statements that are capable of being supported by data and feedback from those involved in key areas of practice.

## **Building an evidence base**

Our approach to researching the OER ecosystem as a whole is to look for evidence across a common set of hypotheses. The main mechanism we are applying to do this is through targeted collaboration with those already achieving impact, but not necessarily drawing research findings from that impact. Seeking collaboration rather than partnership, we believe that in combining research with practical assistance we will bring benefits to all involved and enhance the flow of research data. As secondary mechanisms we also track the literature and activity in the field and use fellowships to broaden the area of data and to avoid limitations of capacity to work at the most detailed level.

The primary focus for the research comprise two overarching 'key' research hypotheses which are held to apply to all research collaborations:

- a) Use of OER leads to improvement in student performance and satisfaction
- b) The open aspect of OER creates different usage and adoption patterns than other online resources

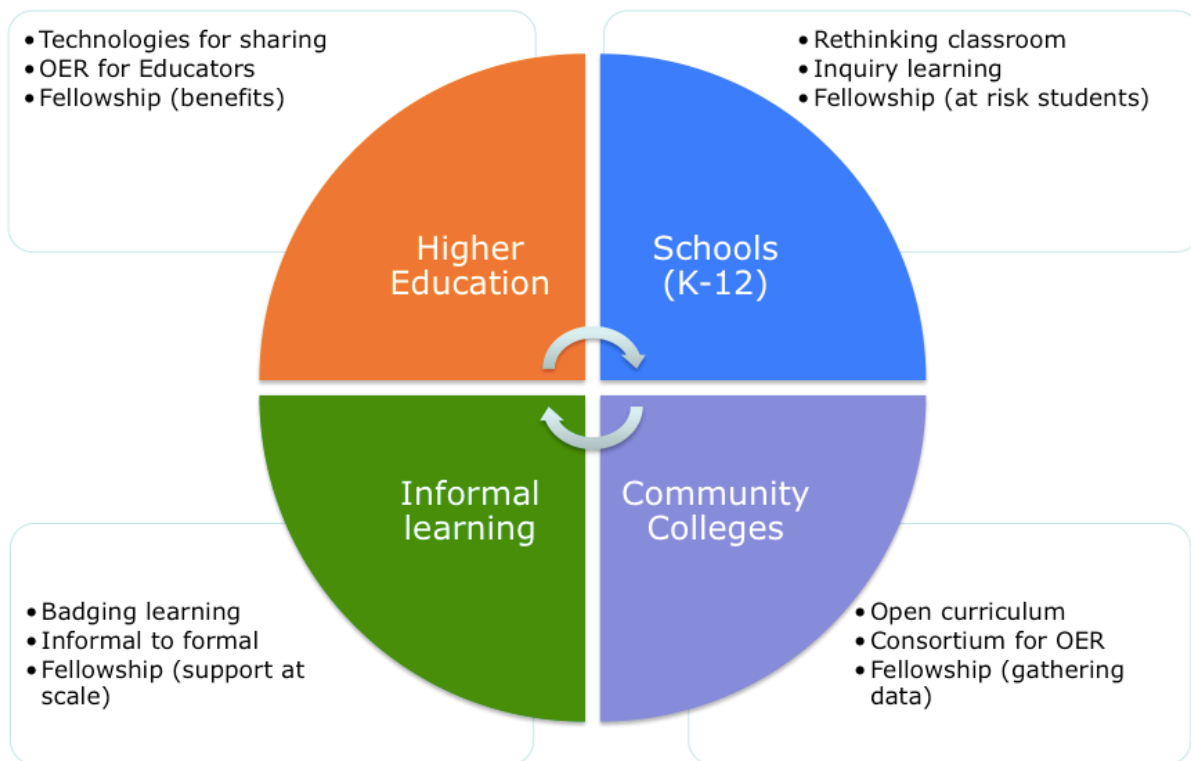
Each project and fellowship is associated with one or more sub-hypotheses.

- c) Open education models lead to more equitable access to education, serving a broader base of learners than traditional education
- d) Use of OER is an effective method for improving retention for at-risk students
- e) Use of OER leads to critical reflection by educators, with evidence of improvement in their practice

- f) OER adoption at an institutional level leads to financial benefits for students and/or institutions
- g) Informal learners use a variety of indicators when selecting OER
- h) Informal learners adopt a variety of techniques to compensate for the lack of formal support, which can be supported in open courses
- i) Open education acts as a bridge to formal education, and is complementary, not competitive, with it
- j) Participation in OER pilots and programs leads to policy change at institutional level
- k) Informal means of assessment are motivators to learning with OER

Outputs from the different research activities assigned to different stakeholder groups at different institutions across different sectors. Primary hypotheses a.) and b.) are being investigated across the OER Research Hub collaborations through a range of qualitative and quantitative research methods (examples include survey; structured interview; focus groups; statistical analysis of student performance; and policy analysis). Since these research questions are consistent across project, the claim to be able to draw direct comparisons is supported.

Figure 1. Areas for collaborations and fellowships in OER Research Hub.

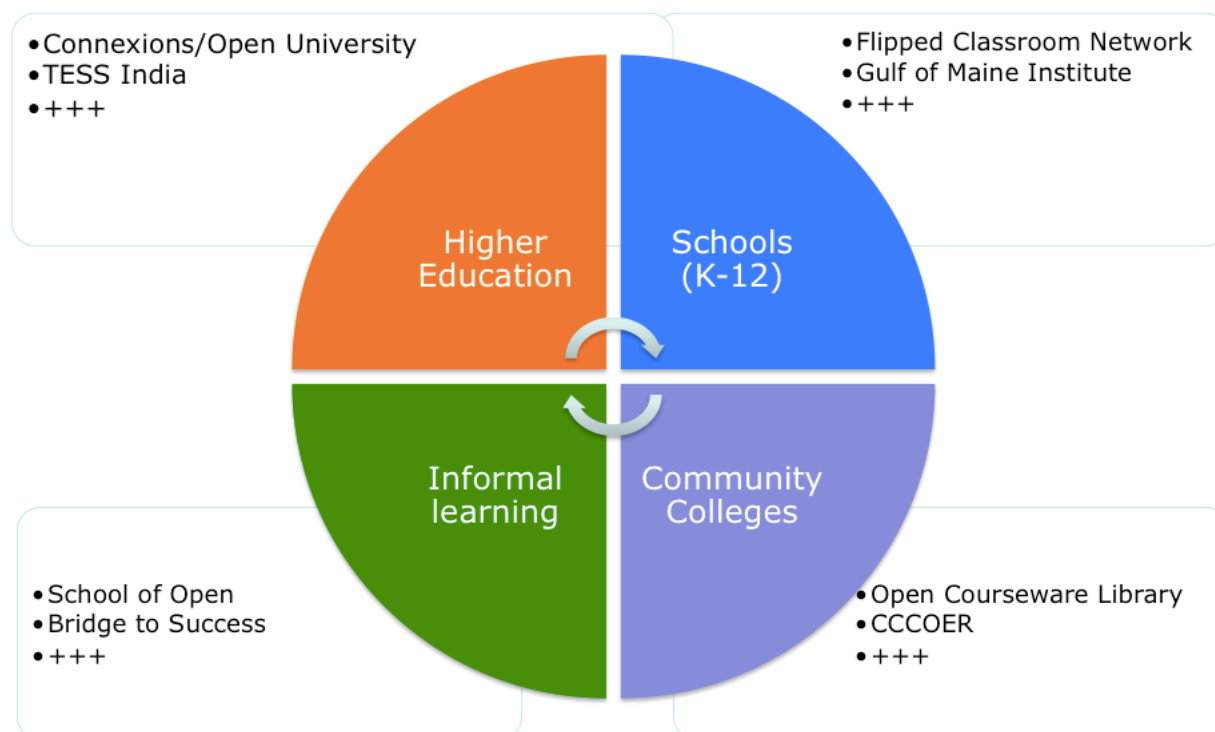


The project collaborations are also clustered across the four areas shown in Figure 2. In each sector there are two collaborations and a further fellowship. The project thus aims to achieve breadth in covering the different core sectors of education and in the less formal structures that are growing around OER.

The same areas are also shown mapped on to the specific examples in the collaborations. For

instance, we are working with the Flipped Classroom Network with a focus on the experience of their more than 9000 teaching practitioners working in the K-12 school sector in the US; we are also working with CCCOER to capture the experiences of those adopting OER in the US Community College sector. Working across sectors also facilitates the sharing of perspective. We do not see that the role of research is purely observational; rather we draw also from the principles of action research and design-based research to help initiate and reflect on change (McNiff & Whitehead, 2002; Freire, 1970; Whyte et al., 1991).

Figure 2. Research Sectors in OER Research Hub.



## Fellowship Programme

The OER Research Hub will fund 14 fellows, and provide a fellowships program that builds on the activities of previous projects and fellows and brings them together with the collaboration programme. Similar fellowship schemes have been employed successfully in the OLnet (2009-2012) and SCORE (2009-2012) projects (OLnet, 2013; SCORE, 2013). Traditional fellowship schemes facilitate the sharing of knowledge and skills, and act as a starting point for networks of learning. OER Research develops this with the concept of the 'linked' fellowships to connect visiting scholars with key personnel and specific research hypotheses. A further series of open fellowships allow external expertise to be brought to bear on research findings.

## Co-ordinated Research

The OER Research Hub has at its core the research team of four. Their actions both support and rely upon of the ecology of sharing. Research methods, instruments and forms of analysis and dissemination are developed and held in common, and are being recorded in the early stages of the project to provide a growing OER Researcher Pack. This pack should in turn can support the work of others through openly licensed research instruments (survey banks,

interview questions, tools for analysis, etc.). As with other actions of the OERRH, open licensing will apply both to raw data, research tools and dissemination of results wherever possible.

Researchers will be able to retain the link back to hypotheses by, for instance, collating and synthesizing research outputs using a research matrix. The need to disseminate results as the project progresses brings out two sometimes overlooked elements. Gathered knowledge and data must be curated; that is collated and structured in meaningful ways. This is vital in an area where policy is shaped by discourse as much practice. We also need ways in which we can present complex information back to the OER community in ways that are accessible and relevant (e.g. data visualization).

## Conclusion and future work

Current work is revealing that there are rich sources of experience in OER, and also patterns of ways to work with OER that can be inspiring. Linking the desire for change to the evidence that there we can see benefits if particular paths are followed we intend to help strengthen the role for OER and ensure lessons being learned are passed on in time to have an impact. To fully achieve our vision of research as part of the ecology of sharing we are also keen to build further collaboration. This forms part of an appeal to the OER community to share data and experiences, so contributing to our collective understanding of the OER ecosystem.

Those considering sharing data can express their interest via <http://is.gd/oerrhub>.

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